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PRINT YOUR BEAUTY

HP INC

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Abstract: This is an idea to enable a person to print their makeup/tattoo (cosmetics such as primer, color correction, concealer, foundation, powder etc. applied to the face, used to enhance or alter the appearance) quickly for any given occasion using Artificial intelligence. This saves time in this busy world. This is a concept where a printer prints a face mask which could be applied on your face quickly to enhance your facial beauty. This is more like have a personal beautician in your own home 24/7. The crux of the idea is to print personalized beauty masks which could be easily applied to your face on any part of your body (like a tattoo) quickly.

Details:

Enhancing facial beauty is quite a long process which involves many steps like

Applying primer: which helps in smoothing lines on face, helps with oily skin.

Color correction: to cover dark circles and patches on face.

Concealer: To blend

Foundation: To match with skin tone

Bronzer: Enhance forehead, nose, cheeks and chin

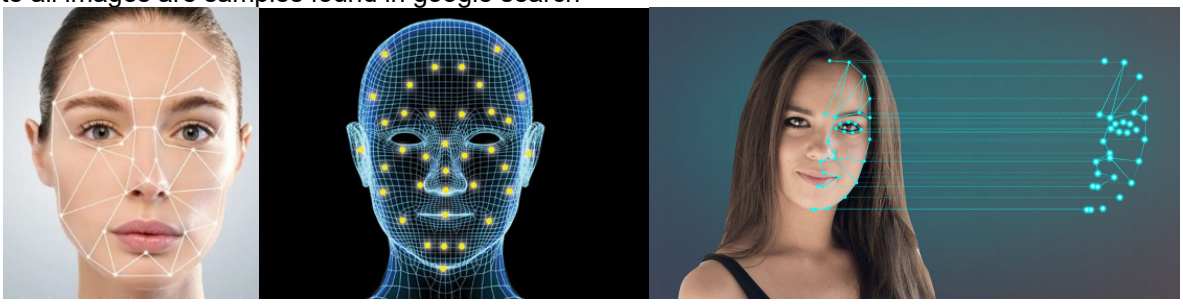
Blush: Enhance cheek

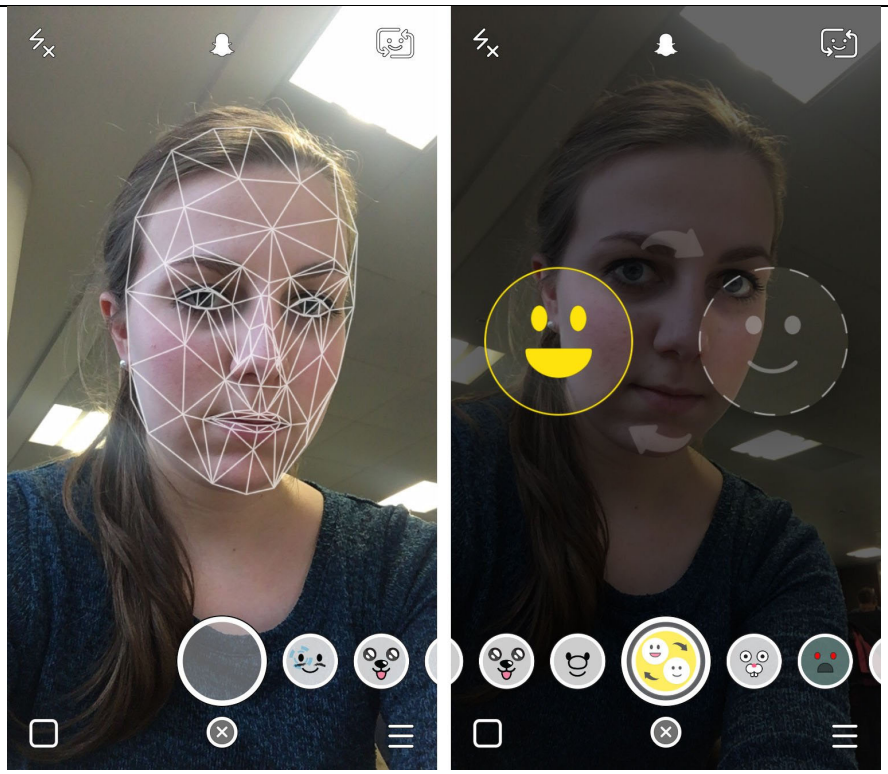
Highlighter: Enhance cheekbones, bridge of nose, inner corner of eyes etc.

Possible steps to make this idea work:

Step 1:
Mobile phone application to scan face: Develop an hp app which could be used to analyze a person's face. Mobile phones these days have extremely high-resolution cameras and they should be able to identify face characteristics like eye color, eyebrow color, skin texture, tone, facial hair and dimensions and depths like shown in the pictures below:

Note all images are samples found in google search





There are apps today in the market which can do facial recognition for security purpose and apps like snap chat for more of facial animation. The idea is to leverage facial recognition concepts like this to capture a 3D model of your face. Based on your face, the app should provide beauty recommendations using AI and ML.

Step2: Select a # mentioned below

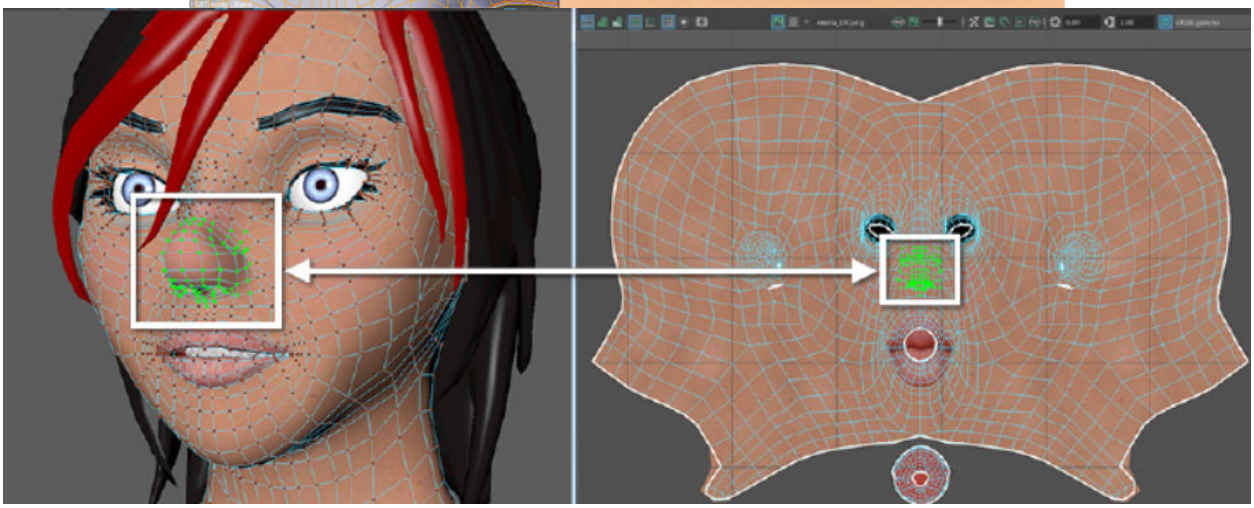
Every person has different facial beauty needs for different occasion as below.

#Executive makeup
#Everyday makeup
#Cultural makeup
#Performance makeup
#Halloween makeup
#Wedding makeup
#Party makeup
#Coverup deep dark circles quickly
#Coverup face pimples and scars
#Face designs
#Facial or body tattoos
#Skin enrichment masks

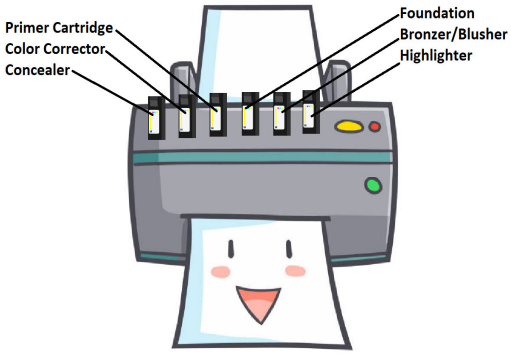
Every beautician has her/his own beautification ideas and their creative skills. Once these beautician finish doing makeup of their client, they should be able to take pictures using their phone on HP app and upload their content to the cloud under one of the # mentioned in the list above. They could sell their work and users virtually across the world should be able to search, browse, buy and download a # they like and apply the # to their face, preview it on their phone and print a mask using their printer. The printer should use AI to appropriately adjust the #makeup or design they downloaded to fit into their face dimensions and skin tones. People should be able to create new # using a computer or phone and should be able to share them. The cloud enabled system should be able to provide personalized recommendations based on skin color, condition (texture, pimples) based on people with similar skin tone. Before printing, the user should be able to adjust colors or patterns on the UI of a phone or printer to

suit their attire.

Step3
Print a Mask: Convert facial 3D image on a 2D image with calculated corrections as shown below and print with a selected #.

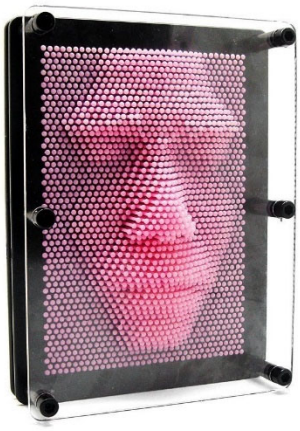


While printing 2D image, right cosmetics should be used. Like we have ink or toner cartridges for printing on paper or textiles, we should have cosmetic cartridges for appropriate face layer printing. A separate cartridge for each layer of face glue, primer, color corrector, concealer, foundation, bronzer, blusher, highlighter etc. Just like we mix CMYK colors, we should be able to mix these products to create an outstanding beauty effect. Since we have the 3D depth information and details about the skin, HP Printer should be able to apply AI technologies to compensate for facial scars, dark circles, pimples, wounds etc. with multi-layer printing. We could partner with cosmetic companies to research on printing cosmetics. We should be able to print on a special substrate like bio cellulose mask sheet which could be easily worn as shown below.



Step 4: Mapping 2D mask which was printed in step 3 to a 3D face model and harden it for easy application:

Since we already know the 3D model of the face we just printed, the printer should have special technology be able to fine needle a face as shown in the picture below and apply the printed 2D mask onto it and slightly harden / tighten the 2D mask we just printed to make it like a 3D shell so that the person applying it will be able to easily hold the shell in hand and can apply the makeup behind the mask. The material used for the mask should be sensitive to some UV light or heat which when applied in the printer, the material hardens to a hand holdable mask.



- This face is regenerated on the printer using simple push up needed technology, hp can use similar concept to precisely move the needles and recreate 3D face.
- Apply 2D mask on 3D face and harden it to look like picture on right

Step 5: Applying mask to face:
The inside part of the mask should have all the makeup printed with a sticky surface and should readily attach to the skin. Just like applying a tattoo on your face.

Disclosed by Raghu Kempanna, HP Inc.